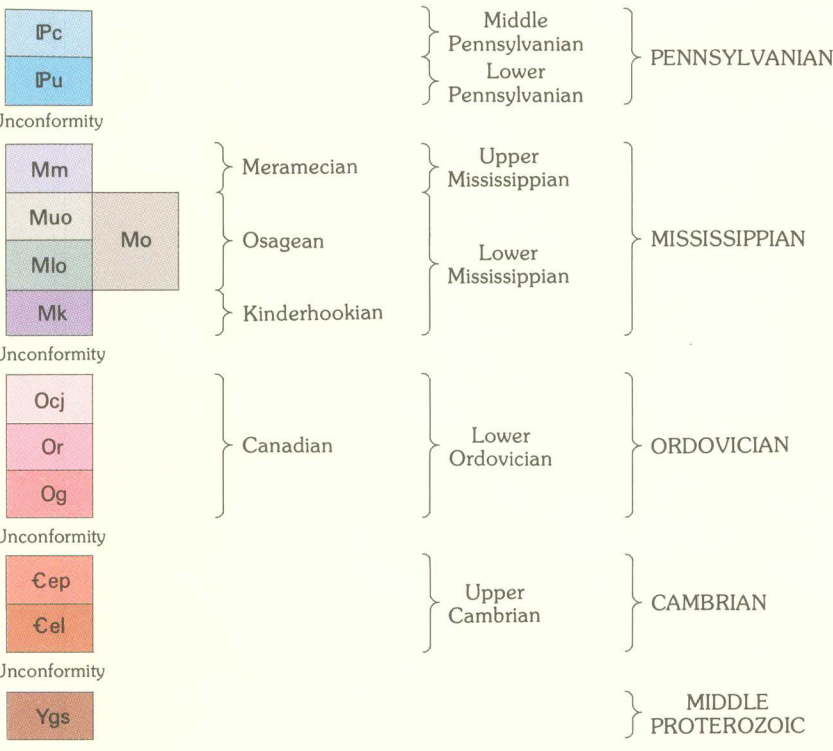


CORRELATION OF MAP UNITS



DESCRIPTION OF MAP UNITS

[Bedrock outcrops are common, but of limited area extent. In most places the bedrock is covered by a relatively thin layer of surficial materials (soil, residuum, colluvium, and (or) alluvium) which were not mapped.]

SEDIMENTARY ROCKS

- Pc** Cherokee Group (Middle Pennsylvanian)—White to light-gray to red, fine to medium-grained, medium- to thick-bedded sandstone, some portions of which contain mica flakes, and associated gray to black fissile shale. Conglomerate of reworked pebbles to cobbles, composed of Ordovician and Mississippian cherts in a sand matrix, occurs locally. Although the chert conglomerate may be basal in part, it appears to be a channel deposit, as do some sandstones and shales. A fluvial environment is interpreted for some deposits of lower part of Cherokee. Maximum thickness 100 ft.
- Pu** Undifferentiated sedimentary rocks (Lower Pennsylvanian)—White to gray or red, fine-grained, nonbedded sandstone and associated white, red, or green clay and hematite-filled sink deposits and areally limited blanket deposits. Maximum exposed thickness 30 ft.
- Mm** Warsaw Formation (Upper Mississippian)—Meramecian—Light- to medium-gray, coarse- to medium-crystalline, crinoidal limestone containing white, pinkish, or green chert. Bryozoans of genus *Archimedes* and brachiopod *Spirella peltasaria* are common. Maximum exposed thickness 80 ft.
- Muo** Keokuk and Burlington Limestones (Lower Mississippian)—upper Osagean—Light- to medium-gray, coarse- to fine-crystalline, massive-bedded, crinoidal limestone. Short Creek Dolite Member is a thin, persistent bed of oolitic limestone, 2-8 ft thick, at top of Keokuk Limestone. In lower part, white to light-gray nodules and bands of chert are locally abundant. Solution has produced a highly irregular bedrock surface with pinnacles of bedrock surrounded by residuum. Maximum exposed thickness 200 ft.
- Mo** Elsey and Reeds Spring Formations and Pierson Limestone (Lower Mississippian)—Lower Osagean—Elsay Formation is light-gray, finely crystalline to micritic limestone having some crinoids and conchoidal fracture; white to gray nodular or elongate lenses of chert, having irregular brown mottling; chert locally constitutes 60 percent or more of formation. Maximum exposed thickness 80 ft. Reeds Spring Formation is gray to brown, finely crystalline, thin-bedded limestone; irregular beds and nodules of blue, brown, and dark-gray chert locally make up 40 percent or more of formation. Maximum exposed thickness 50 ft. Pierson Limestone is brown to tan, medium-crystalline, thin- to thick-bedded, partly argillaceous limestone. Brachiopods common and coral debris sparse. In west-central and northwest parts of quadrangle, where Elsey and Reeds Spring Formations are absent, Pierson Limestone is known as basal "brown beds" of Burlington Limestone. Maximum exposed thickness 40 ft.
- Mk** Northview and Sedalia Formations, Compton Limestone, and Bachelor Formation (Lower Mississippian)—Kinderhookian—Northview Formation is green to gray shale and dolomitic shale with at least two prominent burrowed siltstone and sandstone units, each 1-3 ft thick, that weather into blocky, angular boulders. Siltstone contains worm burrows or tubes, pyrite common. Maximum exposed thickness 80 ft. Sedalia Formation is gray to tan to buff, finely crystalline, argillaceous to arenaceous, dolomitic limestone containing gray to white nodular chert; maximum exposed thickness 100 ft. Contact between Northview and Sedalia Formations can be gradational. Compton Limestone is gray, medium- to fine-crystalline, thin-bedded limestone with polioolitic (glint) calcite cement, dolomitic in part. Green wavy shale partings, glauconite, and small crinoid stems are common. Maximum exposed thickness 25 ft. Bachelor Formation is pale-green, poorly sorted, angular to subrounded, quartz sandstone or conglomeratic sandstone with polioolitic (glint) cement overlain in some areas by a very thin, green, sandy shale. Disseminated grains of glauconite, chert fragments from underlying formations, and rounded black phosphatic nodules are common. Maximum exposed thickness 2 ft.
- Oj** Cotton and Jefferson City Dolomites (Lower Ordovician)—Canadian—Buff to light-gray, fine- to medium-crystalline, thin- to thick-bedded dolomite and argillaceous dolomite; typically contains banded chert nodules or thin seams of white to light-gray chert; some generally discontinuous lenses of fine- to medium-grained, poorly sorted, white to light-gray sandstones as much as 10 ft thick. Such a sandstone in the Bolivar-Buttola area may be correlated with sandstone of Swan Creek, an unnamed member of Cotton Dolomite. A persistent marker bed, 30-60 ft thick, of brown- to gray-mottled, medium-crystalline, thick-bedded dolomite ("Quarry Ledge" of local usage) that weathers to a distinctive coarsely pitted ledge, occurs about 30 ft above the base. The "Quarry Ledge" interval in southeast part of quadrangle is composed of several

repeating similar lithologies separated by thin-bedded, finely crystalline, argillaceous dolomite or fine- to medium-crystalline dolomite. This repeating sequence may be 60 ft thick. Maximum exposed thickness 500 ft.

Or Roubidoux Formation (Lower Ordovician)—Canadian—Inter-bedded light-gray to light-brownish-gray, medium- to fine-crystalline, cherty dolomite and light-gray to light-brown, fine- to medium-grained sandstone. Thickness and composition change from thicker and more sandy in southeast part of quadrangle to thinner and more dolomitic in the north-central part. White to dark-gray or brown chert present as irregular layers, nodules, and lenses in the dolomite; sandy and oolitic cherts are characteristic, but porcelaneous banded varieties are also present. Cryptozoan reef structures are present locally as concentrically banded chert masses as much as 2 ft in diameter. Brecciated chert masses weather to boulders and blocks near the basal contact in the Mack Creek 15' quadrangle. Maximum thickness varies from 220 ft in southeast part of quadrangle to 120 ft in north-central part.

Og Gasconade Dolomite (Lower Ordovician)—Canadian—Light-gray, medium- to coarse-crystalline, thin- to thick-bedded, cherty dolomite, divisible into two units. Upper unit is massive-bedded, relatively chert-free dolomite that forms bluffs and pinnacled glades; medium- to coarse-crystalline, vuggy, and weathers to a coarsely pitted surface, contains sparse, dark-gray or brown, chert nodules or stringers with some druse. Thickness ranges from 40 to 70 ft. Lower unit is similar to upper unit but contains 30-50 percent chert; light-gray, medium- to coarse-crystalline dolomite containing thin beds or nodules of white to gray porcelaneous chert. Cryptozoan structures are common; top of lower unit marked by a persistent, locally silicified, cryptozoan reef 2-8 ft thick. Thin beds of silicified oolites are common, as are karst features. Buff to gray, medium- to coarse-crystalline, thick-bedded, chert-free dolomite 40 ft thick, approximately 50 ft above Gunter Sandstone Member in northeast- to north-central part of quadrangle. Thickness of lower unit varies from about 230 to 260 ft. Gunter Sandstone Member at base consists of 1-20 ft of poorly sorted sandstone and (or) sandy dolomite, commonly containing frosted sand grains. Maximum thickness 300 ft.

Cep Eminence and Potot Dolomites (Upper Cambrian)—Eminence Dolomite is light-gray to gray, medium- to coarse-crystalline, locally cherty dolomite having a coarsely pitted, weathered surface and pinnacled outcrop; minor "shell" druse has thin, delicate quartz lining without chalcocitic banding. Dissolution and karst features common. Maximum thickness 200 ft. Potot Dolomite exposed only in complex at Decaturville (Offield and Pohn, 1979); light- to medium-pinkish-gray to brown, fine- to medium-crystalline dolomite; color is distinctive, but chief diagnostic feature is chalcocitic quartz druse in outcrop deposits and areally limited blanket deposits.

Cel Elvins Group (Upper Cambrian)—Derby-Doerun Dolomite and Davis Formation exposed only in complex at Decaturville (Offield and Pohn, 1979). Derby-Doerun Dolomite is white to tan, coarsely crystalline, massive dolomite that weathers to yellowish tan. Stalactites occur in a few places. Davis Formation is composed of interbedded light- to medium-gray, fine- to medium-crystalline limestone or limy dolomite, and light-grayish-green limy siltstone and shale.

Ygp Granite pegmatite and muscovite schist (Middle Proterozoic)—Exposed only in complex at Decaturville (Offield and Pohn, 1979). Gray to tan, coarse- to medium-crystalline granite pegmatite with large, regular quartz and microcline crystal intergrowths that form a graphic texture. Muscovite schist, containing accessory apatite and black tourmaline, is peripheral to pegmatite core.

- Contact—Approximately located; dotted where concealed under water
- Fault—Dashed where approximately located. Ball and bar on downthrown side
- Monocline—Dashed where approximately located
- Anticline—Showing direction of plunge; dashed where approximately located
- Syncline—Dashed where approximately located

FOLIO NOTE

This map is part of a folio of maps of the Springfield 1° x 2° quadrangle, Missouri, prepared under the Continental United States Mineral Assessment Program (CUSMAP), and supercedes Map MF-1830-D. Other publications in this folio to date include U.S. Geological Survey Miscellaneous Field Studies Maps MF-1830-A through G. A collection of papers related to the geology and mineral resources of the Springfield quadrangle was published as U.S. Geological Survey Bulletin 1942 (Martin and Pratt, 1991).

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Base from U.S. Geological Survey, 1954-69
100,000-foot grid ticks based on Missouri
coordinate system, central and west zones
10,000-meter Universal Transverse Mercator
zone 19B

SCALE 1:250,000
0 5 10 15 20 25 MILES
0 5 10 15 20 25 KILOMETERS

CONTOUR INTERVAL 100 FEET
WITH SUPPLEMENTARY CONTOURS AT 50-FOOT INTERVALS
NATIONAL GEODETIC VERTICAL DATUM OF 1989

Geology compiled in 1984-85
Manuscript approved for publication,
October 28, 1989

TIFIN	VISTA	HERMITAGE	PRESTON	MAKES	STOUTLAND	RICHLAND	WAYNESVILLE
1	2	6	9	10	11	12	14
3	4	7					16
5							
WAGNER	BEAR CREEK	CLOUTY	BUFFALO	LONG LAKE	LEBANON	SPRING	BIG PINEY
18	19	20	21	22	23	24	25
17							26
LOCKWOOD	DAKOTA	MORRIS	STANFORD	MANASSA	RODER	MANE	BAD
27	28	29	30	31	32	34	37
STOUTS CITY	HALLTOWN	BROOKLINE	ADAMS	ROCKDALE	MANCHESTER	MOUNTAIN DRIVE	CARROLL
38	39	41	43	46	47	48	50
	40		42	44			

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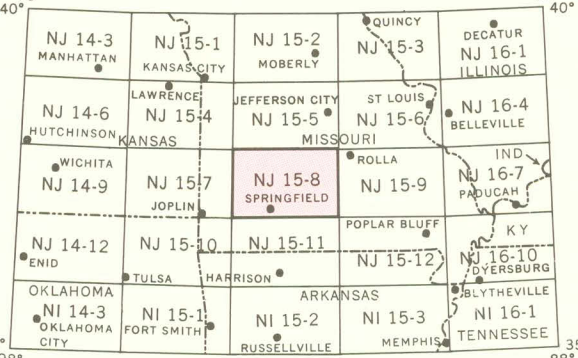
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LOCATION DIAGRAM



INDEX MAP

BEDROCK GEOLOGIC MAP OF THE SPRINGFIELD 1° x 2° QUADRANGLE, MISSOURI

By
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Kenneth C. Thomson, Southwest Missouri State University, and
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Missouri Geological Survey
1991